



Going Green at Home

Now that “going green” is all the rage, it’s wonderful to see people committed to reusing and recycling. However, we often forget that every day activities and products we use also have an impact on the environment. We’re concerned about the food we put in our bodies and the chemicals that might leach into the environment, but what about the products we use every day in our homes? Switching to alternative, “green” cleaning products may seem like a daunting task, but it’s easier than you think. In fact, you might already have all the ingredients in your pantry!

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Special points of interest:

- Tree Selection & Care on 10/7
- Year Round Gardening on 10/9
- Project WILD workshop on 10/11
- AAS Chemical workshop on 10/25
- AAS Biological workshop on 11/8
- Outdoor Classroom Symposium on 11/14
- Household Hazardous Waste workshop on 11/18

Household hazardous products are chemicals used in or around the home, such as cleaners, pesticides, and some personal grooming items. Not only can these products cause adverse human health effects, but they can also be damaging to the environment when washed down the drain or thrown away in the garbage. Treatment plants are often not equipped to remove these substances, and eventually they make their way into rivers and streams where they could affect the health of aquatic organisms.

Switching to non-toxic or less toxic products that have **CAUTION** on the label rather than **WARNING** or **DANGER** is a good way to start. Change your habits, such as pulling up weeds by hand rather than spraying an herbicide. Also, proper disposal of toxic products is vital. Make sure you store them in their original containers until you can bring them to a local collection site. Check Earth911.org or the Georgia Department of Community Affairs for collection sites near you.

Making your own cleaning products is one way to ensure that you know exactly what substances you are using in your home. Vinegar, baking soda, lemon juice, and salt are common ingredients that can be mixed to make a variety of household cleaners and polishes.

CCWS will be holding a Household Hazardous Waste Workshop on November 18th. Learn about how you can make your home and the environment a safer place and make some alternative cleaners to take home as well!



A Watershed Without Boundaries: Lake Allatoona/Upper Etowah River

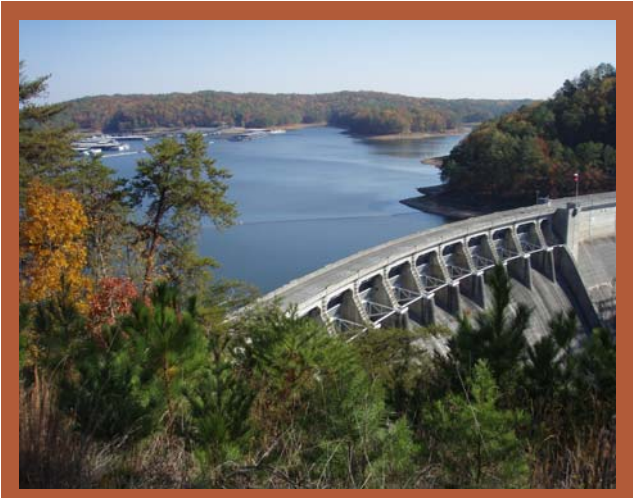
by Adam Sukenick, Cobb County Watershed Monitoring

Lake Allatoona, situated on the Etowah River, has had its fair share of media coverage over the past two years. Although dwindling water levels have dominated the news, Lake Allatoona does more than provide 55 million gallons of drinking water each day. Encompassing 12,010 acres, the lake receives over 6 million visitors each year and is used for hydropower generation, flood control, fish and wildlife management, water quality and navigation. Also, the lake just happens to be the subject of a ground-breaking six year water quality assessment that is the collaborative effort of seven counties and five water and sewer authorities.

The idea of a watershed assessment is not a new concept and such studies are often required to establish water quality at a specific site in order to measure the impact of change over time. Since assessments are conducted to track influences from one project, the study area is typically limited to just those streams impacted by a specific development. What makes the Lake Allatoona/Upper Etowah River watershed assessment so unique is that it encompasses all 1,120 square miles draining to Lake Allatoona and for the first time in the state of Georgia, political and jurisdictional boundaries have been eclipsed by the natural boundaries of the Lake Allatoona watershed.

In the eight counties that comprise the bulk of the Lake Allatoona/Upper Etowah (LA/UE) watershed, growth averaged more than 35% between 1990-2000 and even higher the decade before. Now, and in the future, the struggle to maintain a balance between water protection and local development is an increasingly important component of all water management decisions. Results of this assessment serve to inventory the watershed, examine the data and provide guidance on making sound choices for the future. Such a comprehensive study, voluntarily organized and administered by the partners involved, is unprecedented and shows both the commitment to and importance of water quality for the north metro area.

To complete such an overwhelming task and produce results valuable for all involved requires a tremendous amount of monitoring. The objective of the monitoring plan for this study is to determine water quality and detect trends in the data, establish ecological health, and identify problems and/or relationships between sources of and responses to environmental stressors. In order to meet these goals, site selection included targeted sites known or expected to exhibit degradation (such as point source pollution or new development), and randomly selected sites throughout the region. Random site selection was organized among smaller basins nested within the larger LA/UE watershed in order to equally represent the entire study area. Selected site locations for the entire study would focus on three main points: water quantity, water quality and water resource quality.



Ten water quantity sites were established to measure the volume of water draining from the nested watersheds within the study area and flowing to the Etowah River and Lake Allatoona. USGS flow gages are located at each site and continuously monitor flow. The resulting data provides valuable information on stream hydrology during baseline conditions as well as the rise, peak and fall of water levels during storm events.

Water quality sites were established to measure pollutants draining from surrounding watersheds with potential to reach Lake Allatoona. In all, 16 sites are being monitored at least monthly for water chemistry (temperature, pH, dissolved oxygen, turbidity, etc). A subset of these 16 sites is monitored during peak flow and wet weather events throughout the year and a second subset are continuously monitored for water quality by permanently deploying a field probe. This component of the monitoring plan utilizes the strengths and resources of the

partnership and is managed wholly by those benefitting from the plan. Personnel within the partnership collect monthly samples from each of the 16 water quality sites and deliver them to the Cherokee County Water and Sewerage Authority (CCWSA) laboratory for distribution and consequent water chemistry analysis among 3 labs operated by participants in the study (CCWSA, Cobb County – Marietta Water Authority and Cobb County Water System).

To determine the ecological health of the LA/UE watershed, water resource quality sites were randomly selected for biological assessment. Macroinvertebrates and fish are excellent biological response indicators and the condition of the biological community offers a great deal of information about environmental stresses such as physical habitat, geomorphology, and water chemistry. Results from biological assessments will be used to generate an overall classification (very good – very poor) for each of the smaller basins (53 in all) within the larger LA/UE watershed. Ultimately, this will identify watersheds undergoing degradation and provide the means to prioritize those areas in need of protection or restoration. Such high stakes require a vast amount of forethought and planning before site selection and field sampling.

Streams within each of the small basins are stratified by stream order (1st, 2nd and 3rd) and five sites are selected from each basin to adequately represent the entire watershed. While this stratified random site selection will provide an overall view of individual watershed conditions, as well as the general health of the LA/UE watershed, it was also important to assess a small number of sites with known stressors. To meet this goal, 11 targeted biological sites were chosen to evaluate the impacts of development, land use/land cover characteristics and high percentages of impervious surfaces.

In addition to biological assessments during sampling, field personnel will also perform a habitat assessment, rapid geomorphic assessment and record select water chemistry parameters. A habitat assessment provides critical information on the physical characteristics of a stream channel, bank and substrate stability and the cover and resources available for the aquatic community. The rapid geomorphic assessment or pebble count determines the size and composition of the substrate in the study reach and may indicate if sediment is being introduced from land disturbing activities away from the immediate stream channel or from erosion within the stream channel. Finally, using a field probe to collect water chemistry data will provide enough water quality data to detect acute problems from pollutants. Together with biological data, this information will be an integral part of the watershed evaluation and ultimately, selection of areas most in need of protection or restoration.

The difficulty inherent in a project of this magnitude is meeting the goals of all partners and compiling a plan to meet individual needs. It was a challenging task to bring all parties to the table, secure funding, establish goals and implement an idea. This is the first time such a collaborative effort has been attempted in the state of Georgia and its success will serve as a model for future watershed studies. The study area includes 1,700 miles of streams and the biological component alone has 318 primary sampling sites. Success will place participating counties and water authorities in a position to meet future permit compliance requirements and enable them to make informed decisions for the future. Water quality and ecological health as well as economic stability and growth are often at odds; however, a balance must be maintained to protect our quality of life. This project enables managers to evaluate decisions made in the past and prepare for the future. This unprecedented partnership has recognized the importance of such a comprehensive effort and taken great strides to set a new standard for the future.

Ecological Monitoring Results

| | 2005 | 2006 | 2007 |
|-----------|------|------|------|
| Very Poor | 12% | 5% | 18% |
| Poor | 38% | 18% | 41% |
| Fair | 38% | 53% | 16% |
| Good | 10% | 17% | 6% |
| Very Good | 2% | 7% | 18% |

Percentage of selected sampling sites that met biological assessment ratings

References

Draft watershed Assessment Lake Allatoona/Upper Etowah River Comprehensive Watershed Study, 2008

Design of a Long-Term Environmental Monitoring Program for the Lake Allatoona/Upper Etowah River Watershed, Georgia, 20

Watershed Assessment Lake Allatoona/Upper Etowah River Comprehensive Watershed Study Executive Summary (Draft), 2008

U.S. Army Corps of Engineers (<http://allatoona.sam.usace.army.mil/>)

Etowah Habitat Conservation Plan

by Erin Feichtner, Cobb County Watershed Monitoring

The Etowah River Watershed

The Etowah River and its tributaries drain 11 counties in north Georgia from the headwaters in Chattahoochee National Forest down to the Coosa River in Rome. Allatoona, Butler, Little Allatoona, Little Noonday, Proctor, Noonday, and Tanyard are Etowah tributary streams in northern Cobb. These streams flow into Lake Allatoona, which was built in 1949 and today supplies drinking water, electricity, and recreation opportunities. Currently, the Etowah watershed is experiencing rapid growth.

Biodiversity in the Etowah

The Etowah River is one of the most biodiverse in the United States; presently at least 76 native fish species occur in the river and its tributaries. Historically, the river supported sturgeon and at least 50 species of mussel, all of which are now extirpated. Ranges of surviving fish have diminished and become isolated. Three fish in the Etowah are protected by the federal Endangered Species Act: the Etowah, Amber and Cherokee darters. Of these darters, only the Cherokee is present in Cobb streams. Populations exist in Allatoona, Little Allatoona, Butler, and Proctor Creeks. Cherokee darters are believed to be extirpated in Noonday, Little Noonday, Rubes, and Tanyard, as they have not been found in fish sampling.

The Endangered Species Act

The federal Endangered Species Act (ESA), signed into law by President Nixon in 1972, was designed to protect species from extinction. The ESA prohibits the “take” of species listed under its protection. This includes direct impacts such as hunting, harming, harassing, killing or collecting as well as indirect impacts such as habitat destruction. The ESA allows for a group of individuals and local governments to write a Habitat Conservation Plan (HCP) to describe how they will provide overall protection of a species, although there may be some “incidental take” of individuals. If the US Fish and Wildlife Service (FWS) approves a HCP, it grants an Incidental Take Permit to the applicant. The permit protects the applicant from punishment for incidental loss of species, as long as the plan is followed. Currently, every development project which may affect an endangered species must be looked at individually by the FWS. However, many projects fall through the cracks creating an uneven regulatory field and inadequate protection for the species. Under a HCP, development projects do not need to be individually evaluated and permitted by the FWS because they would be complying with an existing HCP and its policies.

The Etowah Habitat Conservation Plan

In 2002, the governments in the Etowah watershed began working together to develop a regional HCP. The development of the Etowah Aquatic HCP has been overseen by a steering committee made up of voting members of local supporting governments. Representatives of state and federal government and other organizations have been involved as well. The policies of the HCP are modeled after existing local, regional, and state policies to simplify compliance and are based on recent scientific research in the Etowah watershed. Several Technical Committees have developed the policies for the HCP. These Technical Committees are made up of developers, local officials, consulting engineers, and various others. Most staff for the HCP are employees of the University of Georgia, funded by grants from FWS. Governments participating in the HCP will adopt a set of policies to minimize and mitigate the impacts of development activities on imperiled fish. The ordinances and policies include stormwater management, stream buffer ordinances, erosion and sedimentation control, utility stream crossing policies, road stream crossing policies, water supply planning, and monitoring and adaptive management. The HCP will not stop or slow growth; its goal is to ensure development in the basin has a minimal impact on water quality and fish habitat.

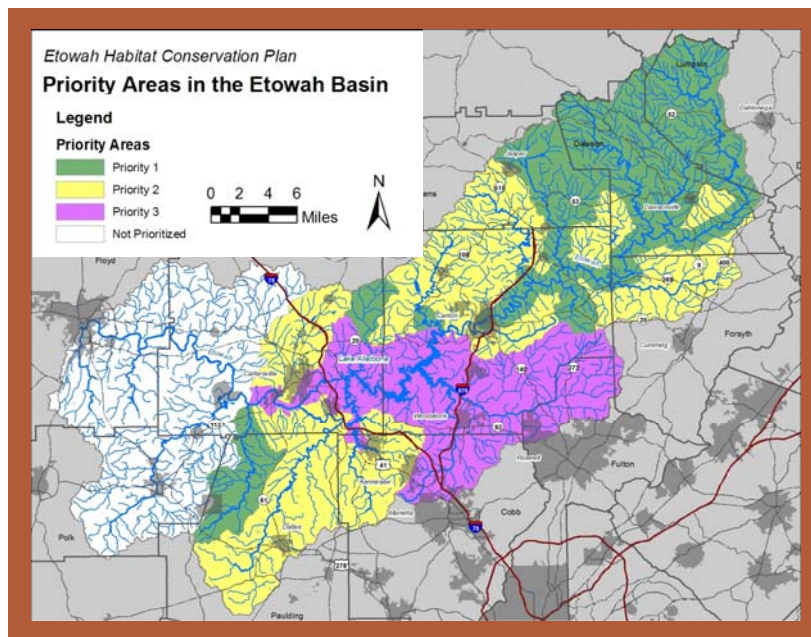
Stormwater Management

Stormwater runoff drains from impervious surfaces into streams, carrying debris, chemicals, and other pollutants. High flows during storms can scour stream banks and lead to sedimentation. The Etowah Aquatic HCP includes a proposed stormwater ordinance for post-construction runoff for new development. Included is a performance standard that limits the volume of runoff in watersheds designated as Priority Areas 1 and 2 which are most critical to the survival of the endangered fish species. Priority Area 1 is home to the most sensitive species and has a more restrictive runoff limit – the volume of runoff from small storms must be the same as if the site were in a forested condition. In Priority Area 2, which supports species that are slightly less sensitive, the limits are slightly less restrictive – developments can generate more runoff, however it can not surpass the amount that would be generated if the site were 95% forested and 5% impervious. The emphasis of this policy is in promoting infiltration of stormwater runoff rather than simply controlling the peak rate of runoff. In both priority areas, governments can designate areas as “development nodes” where restrictions are significantly relaxed. Parts of the Etowah that do not currently provide significant habitat to any imperiled fish are classified as Priority Area 3, and are not subject to the runoff limits. Cobb County contains watersheds designated as Priority Area 2 and 3. Allatoona, Little Allatoona, Butler, Proctor, and Tanyard have been designated as Priority Area 2

while Noonday, Little Noonday, and Rubes Creek have been designated as Priority Area 3. To meet this runoff limit, developers can use better site design while protecting greenspace, reduce the amounts of impervious cover, and use various stormwater infiltration best management practices to return runoff to the soil.

Erosion and Sedimentation (E&S) Control

Erosion produces fine sediment which can blanket the bottom of a stream. This excess sediment can degrade physical habitat, impede spawning, and reduce populations of aquatic insects on which fish feed. Suspended sediments in the water column also impair the ability of fish to breathe and forage for food. The HCP addresses sedimentation by establishing standard operating procedures for the enforcement of existing E&S regulations. These procedures include preconstruction planning meetings, biweekly self-reporting, and a minimum average frequency of inspections. Also, a grading ordinance limits the amount of disturbed area at a site to no more than 17 acres at any one time, and requires that at least 30% of slopes of 25% or more remain undisturbed.



Stream Buffers

Stream buffers, also known as riparian buffers, help maintain clean water and healthy aquatic wildlife when left undisturbed. For more mountainous counties the policy requires 50 ft buffers. For downstream jurisdictions, the HCP will require a 75 ft setback for impervious surfaces. Cobb's buffer ordinance currently requires a 50 ft buffer on most streams with buffer width increasing as watershed size increases. Some places on large streams such as Nickajack require a 100 to 200 foot buffer.

Utility Stream Crossing Policy

Utilities such as gas, cable, and telephone companies have traditionally run their lines across streams via wet open trench construction, which results in significant sedimentation. Directional boring is the preferred method when possible and allows lines to cross streams with minimal disturbance. Directional boring will be the only method allowed during fish spawning periods.

Road Stream Crossing Policy

Road stream crossings can prevent fish from moving up and down stream, fragmenting populations and leading to an increased likelihood of local extinctions. Under the HCP Road Stream Crossing Policy embedded or bottomless culverts or bridges would be favored over problematic pipe culverts for new road crossings.

Water Supply Planning

Water supply reservoirs can permanently fragment habitat and prevent fish movement on a large scale. This protocol assists local governments in identifying reservoir locations with the least impact on protected fishes.

Monitoring and Adaptive Management.

Monitoring will be important in evaluating the HCP's effectiveness. Biological monitoring will assess the plan's effect on fish populations; habitat and compliance monitoring will assess how local governments implement the plan. Information acquired will be used in the HCP's adaptive management plan. The HCP can be modified if components are found to be ineffective or inefficient.

Current Status of the Etowah HCP

The Etowah HCP is currently in review by the US Fish and Wildlife Service, awaiting approval. Participation in the Etowah Aquatic HCP is voluntary; governments may opt out at any time. However, development projects would then need to meet requirements similar to the HCP and be individually evaluated by the Fish and Wildlife Service, causing delay. A solid commitment and much work have gone into the development of the Etowah HCP to coordinate the work efforts and to find solutions that are acceptable to a diverse group of stakeholders. This gives residents of the Etowah watershed the chance to enjoy a thriving community while protecting their unique aquatic ecosystem.

Schedule of Events

Tree Selection & Care Workshop

Date: Tuesday, October 7th
Time: 11:30 am - 1:00 pm
Location: Water Quality Lab
Cost: Free
Call: 770-528-4070

Year Round Gardening

Date: Thursday, October 9th
Time: 11:30 am - 1:00 pm
Location: Water Quality Lab
Cost: Free
Call: 770-528-4070

Project WILD for Educators

Date: Saturday, October 11th
Time: 10:00 am - 3:00 pm
Location: Water Quality Lab
Cost: Free
Call: 770-528-8215

Chemical Monitoring Workshop

Date: Saturday, October 25th
Time: 9:00am - 11:30am
Location: Water Quality Lab
Cost: Free
Call: 770-528-1482

October 2008

Rivers Alive Month
www.riversalive.org

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|--|-----|-------------------------------|-----|---------------------------------|-----|---|
| | | | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 Tree Selection & Care | 8 | 9 Year Round Gardening | 10 | 11 Project WILD |
| 12 National Wildlife Refuge Week (http://www.fws.gov/refuges/) | 13 | 14 | 15 | 16 | 17 | 18 Earth Science Week (http://www.earthsciweek.org) |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 Chemical Monitoring |
| 26 | 27 | 28 | 29 | 30 | 31 | |

Recommended Reading

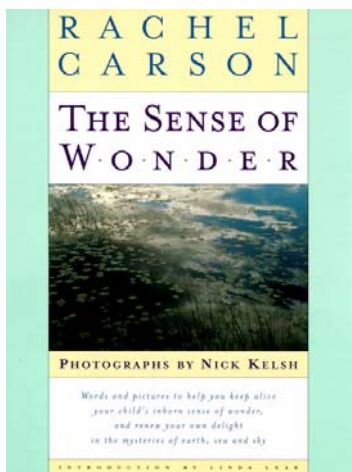
The Sense of Wonder by Rachel Carson

Not long before she died in 1964, the noted environmental writer Rachel Carson wrote an essay for *Woman's Home Companion* magazine called "Helping Your Child to Wonder." In that essay--reprinted here, Carson urged parents to take their children to wild places in order to introduce them to the astonishing variety of life that exists all around us: to study birds, listen to the winds, and observe the stars. Too much of the child's subsequent education, she warns, will be devoted to dimming that "clear-eyed vision, that true instinct for what is beautiful and awe-inspiring" with which children are born; it is the parent's task to be an adult guide who can in turn rediscover the "excitement and mystery of the world we live in."

The lush photographs inspire sensual, tactile reactions: masses of leaves floating in a puddle are just waiting to be scooped up and examined more closely. An image of a narrow path through the trees evokes the earthy scent of the woods after a summer rain. Close-ups of mosses and miniature lichen fantasy-lands will spark imaginations. Like a curious child studying things underfoot and within reach, the camera is drawn to patterns in nature that too often elude hurried adults.




"If a child is to keep alive his inborn sense of wonder," writes Carson, "he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in." *The Sense of Wonder* is a timeless volume that will be passed on from children to grandchildren, as treasured as the memory of an early-morning walk when the song of a whippoorwill was heard as if for the first time.

- From Amazon.com



This publication, like all those profiled in our *Recommended Reading* feature, is available for checkout from the Watershed Stewardship Library, housed in the Water Quality Laboratory.

November 2008

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|-----|-----|--|-----|-----|--|---|
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8  Biological Monitoring |
| 9 | 10 | 11 | 12 | 13 | 14  Outdoor Classroom Symposium | 15 |
| 16 | 17 | 18  Household Hazardous Waste | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | | | | | | |

Schedule of Events

Biological Monitoring Workshop

Date: Saturday, November 8th
 Time: 9:00 am - 1:00 pm
 Location: Water Quality Lab
 Cost: Free
 Call: 770-528-1482

Outdoor Classroom Symposium

Date: Friday, November 14th
 Time: 9:00 am - 3:30 pm
 Location: Rock Eagle 4H Center
 Eatonton, Ga
 Cost: \$55.00
www.eeingorgia.com

Household Hazardous Waste Workshop

Date: Tuesday, November 18th
 Time: 6:00 pm - 7:30 pm
 Location: Water Quality Lab
 Cost: Free
 Call: 770-528-8214

Welcome New Watershed Stewards!

Leigh Lyjak will be monitoring a tributary of Little Noonday Creek.

Karen Faucett and Girl Scout Troop 21 have been marking stormdrains in the Courtyard West and Crabapple Cove subdivisions in Powder Springs.

Bill McAllister and Monica Burke are leading the **Big Shanty River Eagles** in monitoring a tributary of Noonday Creek near Big Shanty Elementary School.

Sarah Morgan and her **3rd grade students** will be monitoring Noses Creek near Clarkdale Elementary School.

Debbie Stewart and the **Kincaid River Kids** will be monitoring a tributary of Little Noonday Creek near Kincaid Elementary School.

Sue Silverman and her 3rd grade group, **We Love H₂O**, will be monitoring a tributary of Willeo Creek at Mount Bethel Elementary.

Cobb County Watershed Stewardship Program

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**This is an official publication of
the Cobb County Water System,
an agency of the Cobb County
Board of Commissioners.**

Sam Olens, Chairman
David Hankerson, County Manager
Helen Goreham, District One
Joe L. Thompson, District Two
Tim Lee, District Three
Annette Kesting, District Four



Cobb County...Expect the Best!



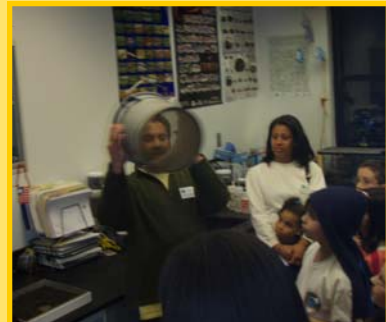
SAVE THE DATE!

2009 Watershed Stewardship Fair

Who: All Cobb County Watershed Stewardship Volunteers

When: February 5, 2009 • 6:30 - 9:00 pm

Where: Cobb County Water Quality Laboratory
660 South Cobb Drive
Marietta, Georgia 30060



2008 Participants shared their monitoring data with other volunteers and enjoyed refreshments and a tour of the water quality lab.